



# Indiana Traffic Safety Facts 2004

## DRAFT Motorcycles DRAFT

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***In 2004, 97  
motorcyclists were  
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reported in 2003.***

All information contained within this fact sheet was obtained from the Fatality Analysis Reporting System (FARS) Web-Based Encyclopedia provided by the National Highway Traffic Safety Administration (NHTSA) available online at <http://www-fars.nhtsa.dot.gov/>. All terms and definitions presented in this fact sheet were extracted from the NHTSA Motorcycle Fact Sheet and the definitions that NHTSA applies to the variables in the FARS database, with one important exception. NHTSA includes six different FARS vehicle body types in their definition of “motorcycle”: 1) Motorcycle, 2) Moped (motorized bicycle), 3) Three-wheel Motorcycle or Moped-not All-Terrain Vehicle, 4) Off-road Motorcycle (2-wheel), 5) Other motored cycle type (Minibikes, Motorscooters) and 6) Unknown motored cycle type. However, the national and Indiana analysis presented in this fact sheet pertains only to the first category, motorcycle. “Light trucks” are as defined by NHTSA and include utility vehicles, vans, pickup trucks, and other light trucks. Passenger vehicles are also as defined by NHTSA and include both light trucks and passenger cars.

Please note that because of the small number of fatal crashes involving this vehicle type, differences in only a few fatalities from one year to the next could lead to large differences in percentages.

### Fatalities, Registrations, and Vehicle Miles Traveled

In 2004, 97 motorcyclists were killed in roadway crashes in Indiana, 24 percent more than the 78 fatalities reported in 2003. Between 2000 and 2004, motorcyclist fatalities increased by 43 percent, while motorcycle registrations increased 28 percent over the same period. Indiana’s fatality rise mirrored the national trend between 2000 and 2004, where motorcyclist fatalities increased by 37 percent. Despite an increase in the number of motorcyclist fatalities during the past few years, the number of fatalities and the fatality rates in Indiana still remained lower than levels prior to 1987, the first year of the Motorcycle Operator Safety Education Program. In 1987, there were 120 motorcyclist fatalities, resulting in a fatality rate per 100,000 vehicles of 114.38.

In Indiana in 2004, motorcycles comprised 2 percent of all registered vehicles and accounted for only 0.6 percent of all vehicle miles traveled. Conversely, motorcycle occupants represented 10.2 percent of all highway-related fatalities and 11.3 percent of all vehicle occupant fatalities in 2004.

**Table 1. Motorcyclist and Passenger Vehicle Fatalities and Fatality Rates in Indiana, 1995–2004**

Year	MC Fatalities	Registered Motorcycles	MC Fatality Rate per 100K Registered Motorcycles	MC Vehicle Miles Traveled (millions)	MC Fatality Rate per 100MVT	Passenger Vehicle Fatalities	Passenger Vehicle Miles Traveled (millions)	Passenger Vehicle Fatality Rate per 100MVT
1995	59	89,936	65.60	Not Available	N/A	776	Not Available	N/A
1996	54	90,526	59.65	Not Available	N/A	810	Not Available	N/A
1997	44	92,536	47.55	Not Available	N/A	771	Not Available	N/A
1998	59	97,366	60.60	260.36	22.66	793	60842.35	1.30
1999	60	101,140	59.32	256.78	23.37	820	61641.75	1.33
2000	68	114,293	59.50	260.62	26.09	714	62551.56	1.14
2001	69	120,062	57.47	334.19	20.65	741	63968.61	1.16
2002	86	128,013	67.18	355.43	24.20	623	64642.97	0.96
2003	78	137,788	56.61	353.94	22.04	644	64359.30	1.00
2004	97	146,249	66.33	424.49	22.85	712	64314.61	1.11

Table includes all motorcycle drivers and passengers suffering a fatal injury in a roadway crash. Fatality Rates and Vehicle Miles Traveled have been rounded to the nearest hundredth for presentation. N/A = Not Available.

Sources: Registered Vehicles – Indiana BMV, Vehicle Miles Traveled – Indiana Department of Transportation

***Per vehicle mile, motorcyclists were 21 times as likely as passenger vehicle occupants to die in a motor vehicle crash.***

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Per vehicle mile traveled in 2004, motorcyclists were 21 times as likely as passenger-vehicle occupants to die in a motor vehicle crash. Between 2000 and 2004, the passenger-vehicle fatality rate per 100 million vehicle miles traveled decreased 3.0 percent, while the motorcycle fatality rate decreased 12.4 percent.

### Driver Age

Nationwide between 2000 and 2004, there was a more dramatic increase in the number of older riders involved in fatal motorcycle crashes than the number of younger riders involved. The number of motorcycle drivers age 40 and above involved in fatal crashes increased from 1,174 to 1,827 (a 56 percent increase for this five-year period.) The number of motorcycle drivers below age 40 involved in fatal crashes increased at a much slower rate, from 1,678 to 2,057 (a 23 percent increase.) In 2000, 41 percent of all motorcycle drivers involved in a fatal crash were age 40 and above, compared to 47 percent in 2004.

Similarly, in Indiana between 2000 and 2004, the number of motorcycle drivers age 40 and above involved in fatal crashes nearly doubled from 22 to 42 (a 91 percent increase). The number of motorcycle drivers below age 40 involved in fatal crashes increased from 46 to 53, (a 15 percent increase.) The age composition of motorcycle drivers involved in fatal crashes in Indiana is subject to much higher variability from year to year because there are fewer drivers involved in crashes each year. When five years of data are combined, between 1995 and 1999, 35 percent of all motorcycle drivers involved in Indiana fatal crashes were age 40 and above, compared to 40 percent for 2000–2004.

**Table 2. Motorcycle Drivers Involved in Fatal Crashes by Age, 1995-2004.**

Year	United States				Indiana			
	<40	40+	Total	Percent 40+	<40	40+	Total	Percent 40+
1995	1,614	530	2,144	25%	46	16	62	26%
1996	1,440	614	2,054	30%	41	11	52	21%
1997	1,373	696	2,069	34%	28	15	43	35%
1998	1,473	748	2,221	34%	38	24	62	39%
1999	1,463	951	2,414	39%	29	31	60	52%
<b>1995-1999 Total</b>	<b>7,363</b>	<b>3,539</b>	<b>10,902</b>	<b>32%</b>	<b>182</b>	<b>97</b>	<b>279</b>	<b>35%</b>
2000	1,678	1,174	2,852	41%	46	22	68	32%
2001	1,881	1,252	3,133	40%	47	31	78	40%
2002	1,784	1,447	3,231	45%	50	37	87	43%
2003	1,966	1,695	3,661	46%	49	30	79	38%
2004	2,057	1,827	3,884	47%	53	42	95	44%
<b>2000-2004 Total</b>	<b>9,366</b>	<b>7,395</b>	<b>16,761</b>	<b>44%</b>	<b>245</b>	<b>162</b>	<b>407</b>	<b>40%</b>

Drivers of unknown age are excluded.

### Crash Characteristics

NHTSA defines fixed objects as “stationary structures or substantial vegetation attached to the terrain.” For a particular vehicle in a fatal crash, the most harmful event is defined as “the event during a crash for a particular vehicle that is judged to have produced the greatest personal injury or property damage.” In Indiana in 2004, 19 percent of motorcycles involved in fatal crashes (18 out of 95) experienced a collision with a fixed object as the most harmful event in the crash, compared to 19 percent for passenger cars, 12 percent for light trucks and 4 percent for large trucks. Of all the different fixed objects that these 18 motorcycles collided with in 2004, trees were hit with the highest frequency. Twenty-eight percent of the 18 motorcycles (5 motorcycles) collided with a tree.

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***In 2004, 32 percent of all motorcycle drivers involved in Indiana fatal crashes were speeding, 1.5 times the rate for drivers of passenger cars and 2.4 times the rate for drivers of light trucks.***

***In 2004, 27 percent of the 95 motorcycle operators involved in fatal crashes were operating the vehicle with an invalid license at the time of the collision.***

Thirty-seven percent (35 out of 95) of all motorcycles involved in fatal crashes in 2004 were in a single-vehicle crash. Only six percent of these motorcycles (2 of 35) were attempting to negotiate a curve when the crash occurred.

The remaining 60 motorcycles involved in fatal crashes in 2004 were in a multiple-vehicle crash. Ten of the 60 motorcycles were in crashes involving a total of 3 or 6 vehicles. The other 50 were in two-vehicle fatal crashes. All 50 experienced a collision with the other vehicle in the crash as the first harmful event of the crash. Seventy-six percent of these 50 (38 motorcycles) were initially impacted in the front, and only 6 percent (3 motorcycles) were initially impacted in the rear. Of the 38 motorcycles initially impacted in the front, 63 percent (24 motorcycles) contacted the side of the other vehicle at a right angle.

The 50 motorcycles involved in two-vehicle fatal crashes accounted for exactly 50 different crashes, each involving a motorcycle and a different vehicle type. In 12 of these 50 fatal crashes (24 percent), the other vehicle was turning left while the motorcycle was going straight, passing, or overtaking the vehicle. Both vehicles were going straight in 29 crashes (58 percent).

NHTSA considers a crash to be **speeding-related** if the driver was charged with a speeding-related offense or if an officer indicated that racing, driving too fast for conditions, or exceeding the posted speed limit was a contributing factor in the crash.

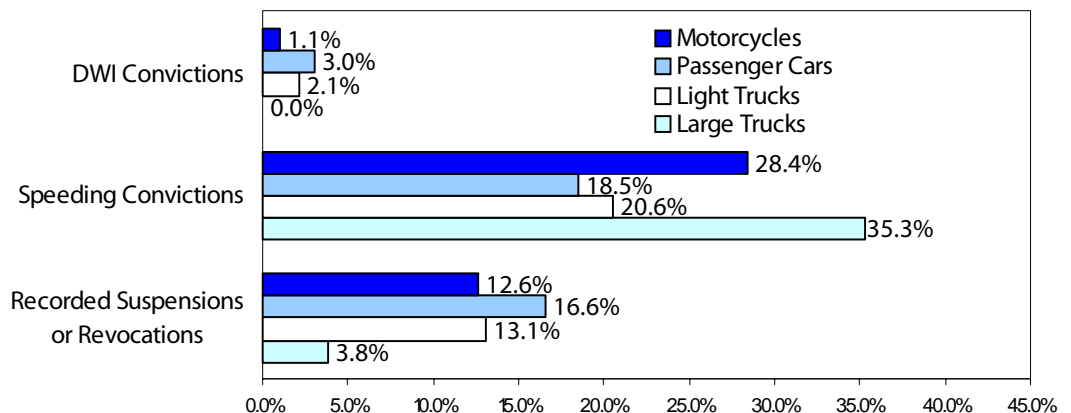
In 2004, 32 percent of the 95 motorcycle drivers involved in Indiana fatal crashes were speeding, 1.5 times the rate for drivers of passenger cars (21 percent of 569 drivers) and 2.4 times the rate for drivers of light trucks (13 percent of 478 drivers).

### Licensing

In Indiana, 27 percent of the 95 motorcycle operators involved in fatal crashes in 2004 were operating the vehicle with an invalid license at the time of the collision (either not licensed at all or without a valid license to operate a motorcycle). This rate was just over twice the rate for passenger-vehicle drivers involved in fatal crashes in Indiana (12 percent), and higher than the nationwide rate for motorcycle drivers (23 percent).<sup>2</sup>

Of all motorcycle operators in fatal crashes, 12.6 percent had a previous suspension or revocation, compared to 15.0 percent of passenger vehicle operators; 28.4 percent had a previous speeding conviction, compared to 19.5 percent of passenger vehicle operators; and 1.1 percent had at least one previous conviction for driving while intoxicated on their driver records, compared to 2.6 percent of passenger vehicle operators.

**Figure 1. Previous Driving Records of Drivers Involved in Fatal Traffic Crashes in Indiana, by Type of Vehicle, 2004**



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***In 2004, motorcycle operators involved in fatal crashes had higher intoxication rates than drivers of all other types of vehicles.***

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### Alcohol

Unfortunately, known blood alcohol content (BAC) test results are not available for all drivers involved in fatal crashes. Missing data can result for a number of reasons, the most frequent of which is that persons are not always tested for alcohol. In 2001, NHTSA began using a revised statistical method—multiple imputation—to estimate missing information about blood alcohol concentration levels for persons involved in fatal crashes. All of the information presented in this fact sheet pertaining to alcohol is based on the imputation method. Alcohol rates are estimates that represent a mix of both known and estimated BACs. More information on the multiple imputation method, including detailed tabulations of alcohol involvement in various categories (age, gender, time of day, etc.), is available in NHTSA's Technical Report DOT HS 809 403, "Transitioning to Multiple Imputation: A New Method to Estimate Missing Blood Alcohol Concentration (BAC) Values in FARS."

In 2004, the estimated rate of alcohol involvement (blood alcohol concentration of .01 grams per deciliter or greater) for motorcycle operators involved in Indiana fatal crashes decreased from 40 percent in 2003 to 24 percent in 2004. This 2003 rate of 40 percent was about twice the estimated rate for passenger vehicle drivers, while the 2004 rate of 24 percent was just slightly higher than the 21 percent rate for passenger vehicles. Motorcycle operators involved in Indiana fatal crashes in 2004 also had higher estimated intoxication rates (BAC of .08 grams per deciliter or greater) than any other type of motor vehicle driver. Estimated intoxication rates for vehicle operators involved in fatal crashes were 21 percent for motorcycles, 19 percent for passenger cars, 16 percent for light trucks and 0 percent for large trucks.

Between 2000 and 2004, there were 162 motorcycle drivers involved in fatal crashes age 40 and above, 202 drivers age 21 to 39 and 43 drivers under age 21. The estimated intoxication rate for motorcycle drivers was the same for operators age 40 and above and operators age 21-39 (31 percent), and only 11 percent for under 21. These intoxication rates do not follow the trend seen in passenger vehicle drivers. Over the same five year period, the estimated intoxication rate for passenger vehicle drivers was substantially higher for operators age 21 to 39 (26 percent), followed by ages 40 and above and under 21 (13 percent for both).

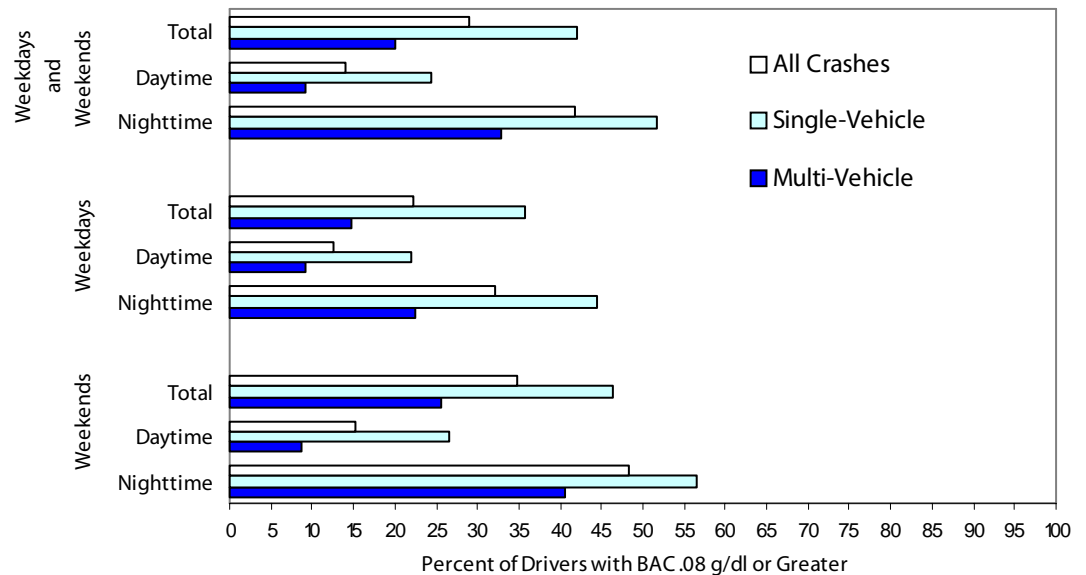
In Figure 2, five years of data (2000–2004) have again been combined so that motorcycle drivers involved in fatal crashes can be broken down into day of week, time of day and type of crash to compare intoxication rates. Forty-two percent (70 out of 165) of the motorcycle operators involved in fatal single-vehicle crashes in 2000–2004 were estimated to be intoxicated. Fifty-seven percent (35 out of 61) of the operators involved in single-vehicle fatal crashes on weekend nights were estimated to be intoxicated.

There were 213 motorcycle operators involved in fatal traffic crashes at night (6:00 PM–5:59 AM) and 189 involved in fatal traffic crashes during the day (6:00 AM–5:59 PM). Five drivers were involved in a crash where the time of day was not known. Drivers involved in crashes at night were three times as likely to be intoxicated as those involved during the day (42 percent and 14 percent, respectively).

**Forty-two percent of the motorcycle operators involved in fatal single-vehicle crashes in 2000–2004 were intoxicated.**

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**Figure 2. Intoxication Rates for Motorcycle Operators Involved in Fatal Traffic Crashes in Indiana, by Time of Day, 2000–2004**



Daytime: 6:00 AM to 5:59 PM

Nighttime: 6:00 PM to 5:59 AM

Weekday: Monday 6:00 AM to Friday 5:59 PM

Weekend: Friday 6:00 PM to Monday 5:59 AM

Please note that the estimations produced by the imputation model have been rounded to the nearest whole number of operators. However, all percentages referenced in the text of this fact sheet and appearing in Figure 2 have been computed from unrounded data.

**NHTSA reports that helmets are estimated to be 37 percent effective in preventing fatal injuries to motorcyclists.**

### Helmets

NHTSA estimates that helmets are 37 percent effective in preventing fatal injuries to motorcyclists. All motorcycle helmets sold in the United States are required to meet Federal Motor Vehicle Safety Standard 218, the performance standard which establishes the minimum level of protection that helmets must afford each user.

In 2004, there were 19 states plus the District of Columbia and Puerto Rico that required helmet use by all motorcycle operators and passengers. In another 28 states, only persons under a specific age, (usually 18), or meeting some other criteria (usually related to insurance and/or experience), were required to wear helmets. Three states had no laws requiring helmet use. Indiana law requires all riders (operators and passengers) under the age of 18 to wear a helmet. Indiana law also requires all operators holding only an instructional permit (a temporary learner's permit or a learner's permit) to wear a helmet. (Operators holding only an instructional permit can not carry passengers.)

In 2004, for the 91 (out of 97) fatally injured motorcyclists (operators and passengers) in Indiana with known helmet use, the reported helmet use rate was 27 percent, higher than the rate in 2003 (26 percent). The 2004 rate was considerably lower, however, than that of the entire nation (56 percent), as well as the 31 states without a law requiring all riders to wear a helmet (35 percent).

In 2004, the reported helmet use rate for intoxicated motorcycle operators (BAC of .08 grams per deciliter or greater) involved in Indiana fatal traffic crashes was estimated to be 13 percent, compared with 36 percent for those who were sober (BAC of .00 grams per deciliter).

**DRAFT****Table 3. 2004 Indiana Motorcyclist Fatalities by County**

County	2004				
	Total Traffic Fatalities	Motorcyclist Fatalities	Percent of Total	Registered Motorcycles	Motorcyclist Fatalities per 1,000 Registered Vehicles
Adams	7	0	0.0	843	0.00
Allen	31	6	19.4	6,915	0.87
Bartholomew	11	0	0.0	1,819	0.00
Benton	1	0	0.0	194	0.00
Blackford	2	0	0.0	404	0.00
Boone	7	1	14.3	1,298	0.77
Brown	12	7	58.3	690	10.14
Carroll	4	0	0.0	608	0.00
Cass	7	0	0.0	914	0.00
Clark	13	0	0.0	1,960	0.00
Clay	8	0	0.0	866	0.00
Clinton	13	1	7.7	942	1.06
Crawford	2	0	0.0	221	0.00
Daviess	6	1	16.7	624	1.60
Dearborn	9	0	0.0	1,421	0.00
Decatur	5	2	40.0	624	3.21
DeKalb	5	0	0.0	1,242	0.00
Delaware	14	1	7.1	2,228	0.45
Dubois	11	2	18.2	975	2.05
Elkhart	29	3	10.3	4,513	0.66
Fayette	5	1	20.0	577	1.73
Floyd	9	2	22.2	1,437	1.39
Fountain	7	1	14.3	380	2.63
Franklin	6	1	16.7	664	1.51
Fulton	2	1	50.0	670	1.49
Gibson	5	1	20.0	855	1.17
Grant	8	1	12.5	2,049	0.49
Greene	4	1	25.0	875	1.14
Hamilton	20	2	10.0	4,671	0.43
Hancock	8	2	25.0	1,765	1.13
Harrison	8	0	0.0	874	0.00
Hendricks	12	2	16.7	3,494	0.57
Henry	10	1	10.0	1,459	0.69
Howard	11	1	9.1	2,699	0.37
Huntington	7	2	28.6	1,069	1.87
Jackson	13	2	15.4	1,045	1.91
Jasper	9	0	0.0	952	0.00
Jay	3	0	0.0	612	0.00
Jefferson	5	1	20.0	767	1.30
Jennings	7	0	0.0	727	0.00
Johnson	8	1	12.5	3,401	0.29
Knox	5	0	0.0	744	0.00
Kosciusko	17	2	11.8	2,008	1.00
LaGrange	12	1	8.3	721	1.39
Lake	58	6	10.3	9,336	0.64



**DRAFT****Table 3. 2004 Indiana Motorcyclist Fatalities by County (continued)**

County	2004				
	Total Traffic Fatalities	Motorcyclist Fatalities	Percent of Total	Registered Motorcycles	Motorcyclist Fatalities per 1,000 Registered Vehicles
LaPorte	30	3	10.0	3,182	0.94
Lawrence	7	1	14.3	1,375	0.73
Madison	21	1	4.8	3,483	0.29
Marion	96	11	11.5	14,716	0.75
Marshall	11	0	0.0	1,439	0.00
Martin	3	1	33.3	232	4.31
Miami	11	1	9.1	1,441	0.69
Monroe	12	1	8.3	2,214	0.45
Montgomery	10	1	10.0	1,012	0.99
Morgan	12	0	0.0	2,550	0.00
Newton	7	0	0.0	524	0.00
Noble	11	0	0.0	1,110	0.00
Ohio	1	0	0.0	163	0.00
Orange	5	0	0.0	504	0.00
Owen	13	0	0.0	588	0.00
Parke	2	0	0.0	407	0.00
Perry	4	3	75.0	455	6.59
Pike	1	0	0.0	325	0.00
Porter	32	6	18.8	5,018	1.20
Posey	4	0	0.0	717	0.00
Pulaski	4	0	0.0	414	0.00
Putnam	6	0	0.0	939	0.00
Randolph	3	1	33.3	802	1.25
Ripley	3	0	0.0	742	0.00
Rush	4	0	0.0	508	0.00
Saint Joseph	24	1	4.2	5,489	0.18
Scott	10	0	0.0	651	0.00
Shelby	4	0	0.0	1,347	0.00
Spencer	0	0	N/A	481	0.00
Starke	8	0	0.0	750	0.00
Steuben	6	0	0.0	916	0.00
Sullivan	2	0	0.0	480	0.00
Switzerland	6	1	16.7	245	4.08
Tippecanoe	20	1	5.0	2,989	0.33
Tipton	5	1	20.0	589	1.70
Union	1	0	0.0	195	0.00
Vanderburgh	18	3	16.7	3,358	0.89
Vermillion	6	1	16.7	465	2.15
Vigo	22	3	13.6	2,145	1.40
Wabash	7	0	0.0	1,118	0.00
Warren	3	0	0.0	197	0.00
Warrick	5	0	0.0	1,453	0.00
Washington	7	0	0.0	911	0.00
Wayne	7	0	0.0	1,720	0.00
Wells	4	0	0.0	781	0.00
White	7	0	0.0	639	0.00
Whitley	6	0	0.0	941	0.00
<b>Total</b>	<b>947</b>	<b>97</b>	<b>10.2</b>	<b>146,249*</b>	<b>0.66</b>

\*Please note that the statewide registered motorcycle total includes 377 motorcycles registered as "special sales" and not attributed to a particular county.

Table includes all motorcycle drivers and passengers suffering a fatal injury in a roadway crash.

Source: Registered Vehicles – Indiana BMV

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### Conclusions

Indiana has made great strides in reducing both the number of motorcyclist fatalities and the motorcyclist fatality rate per registered vehicle since the late 1980s. The 2004 motorcyclist fatality rate per vehicle mile traveled was not any higher than the rate five years ago in 2000. However, the 97 fatalities recorded in 2004 was still the highest number of fatalities recorded since 1987 (120), and over the past five years Indiana has mirrored a nationwide trend of increasing registrations and fatalities (particularly among those age 40 and above). Motorcycle crashes have clearly emerged as an important traffic safety issue both for the United States and the state of Indiana. Fatal crash statistics reveal that both speeding and alcohol are particular problem areas, especially when compared to other vehicles.

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*This publication was prepared on behalf of the Indiana Criminal Justice Institute by Purdue University's Center for the Advancement of Transportation Safety. All information contained within was gathered from the Fatality Analysis Reporting System (FARS) Web-Based Encyclopedia provided by the National Highway Traffic Safety Administration (NHTSA) available at <http://www.fars.nhtsa.dot.gov>. All figures are considered current as of September 27, 2005. Please direct any questions concerning data in this document to the Center for the Advancement of Transportation Safety, Purdue University, 1291-F Cumberland Ave., West Lafayette, IN 47906-1385, 765-494-7038.*